the palo amarillo region, and mingled with the latter species, is probably another member of this group.

The properties of the palo amarillo rubber are peculiar. Taken by itself it is of only medium quality, but mixed in suitable proportion with other varieties, especially with Para rubber, it markedly improves them.

TWO NEW FOSSIL PLANTS FROM FLORISSANT, COLORADO*

By T. D. A. Cockerell

Polypodiaceae

Hypolepis coloradensis n. sp.

Pinnules about 2½ mm. long, oblong or obtusely subtriangular, connected basally, and bearing two to four large round marginal sori, which as preserved are very dark in color. In general structure and appearance, the plant closely resembles *Hypolepis repens* (L.) Presl, as figured by Shimek in Bull. Lab. Nat. Hist. Univ. Iowa, IV (1897), pl. v, f. 4. The more usual forms of *Hypolepis* have only one or two sori to the pinnule, but no doubt the earlier condition is one in which they are numerous, as in *Adiantum.*

Habitat. — Miocene shales of Florissant, Station 14; fragments only. The genus is to-day common in the West Indies and Central America.

Caesalpiniaceae

Bauhinia pseudocotyledon n. sp.

Leaf circular in outline, or nearly so, 16 mm. long and 18 broad, as preserved dark in color, apparently thick; the median sinus about 6 mm. long, its sides, except apically, very close together; venation indistinct, but with a lens it is possible to see clearly a mid-vein running to the sinus, and two strong laterals, as shown in the figure; petiole short, about 2 mm., twisted to one side. From its dark color, apparent thickness, and obscure venation, I thought at first that this was a cotyledon, probably of *Ipomoea*, possibly of some Sterculiaceous plant related to *Pentapetes.* A closer scrutiny shows, however, that the venation will not accord with these. In the seedlings there appears to be

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morphologically no mid-vein, and when one is present it consists of the two inner laterals united, which diverge before reaching the sinus. All this is quite different from the condition in *Bauhinia*, with which the fossil accords.

Habitat. — Miocene shales of Florissant, 1908. The genus occurs as far back as the Cretaceous (cf. Berry, TORREYA 8 : 218).

I have sometimes remarked on the absence of Neotropical elements in the Florissant shales. The two plants now described

Hypolepis coloradensis Ckll.

Bauhinia pseudocotyledon Ckll.

are apparent exceptions to this, but I believe that they did not invade North America from the south, but belong to a flora which formerly flourished in the north, and has now been pushed southward by changes in the climate. What I mean when I speak of the absence of Neotropical elements at Florissant, is that I do not find genera or families which there is reason to believe *originated* in South America. Dr. Knowlton, in his interesting discussion of the Tertiary flora of the Yellowstone (Monog. U. S. Geol. Surv. XXXII, pt. 2, p. 778) remarks that "the Tertiary flora appears to have originated in the south, while the present flora is evidently of more northern origin." I think that on the contrary, there is much reason for thinking that the Tertiary flora originated in the north, and has (so far as it has survived), to a considerable extent, since *travelled south.* (For a discussion of the same question as applied to animals, see *Nature*, Aug. 6, 1908, p. 318.)

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